

# Critical stable envelopes and Yangians

*Thursday 9 October 2025 11:30 (1 hour)*

Using the critical stable envelopes (see Yalong's talk), we can construct solutions to Yang-Baxter equations with R-matrixes acting on the critical cohomologies of symmetric quiver varieties with potentials. Then, the FRT formalism gives natural (shifted) (super) Yangian action on these critical cohomologies. For example, in the case of tripled quiver with the canonical cubic potential, the zero shifted Yangian reproduces the Maulik-Okounkov Yangian. In general, given a symmetric quiver  $Q$  with potential  $W$ , we get a family of shifted Yangians with shift homomorphisms and coproducts, where the zero shifted one is a deformation of enveloping algebra of  $\mathfrak{g}[u]$  for a certain Lie algebra  $\mathfrak{g}$  determined by  $(Q, W)$ . The positive part of  $\mathfrak{g}$  is expected to be related to the BPS Lie algebra of  $(Q, W)$ . This talk is based on joint work with Yalong Cao, Andrei Okounkov, and Zijun Zhou.

**Presenter:** ZHOU, Yehao (SIMIS)